

## Checklist of Japanese Earthworms updated from Easton (1981)

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### Summary

The current list is about 82 valid species in seven families from Japan. Previous revisions by Easton (1981) had listed 73 or 74 species and Blakemore (2003) provisionally catalogued 76 valid earthworm taxa, with approximately 80 further names (ca. 50% of the total) either in synonymy or retained as *species incertae sedis*. Some 60 or so “new” *Pheretima* names with strange genus and species definition had been added by Ishizuka in 1999-2001 that, mostly ignorant of ICZN (1999), had but a few considered valid taxa with the majority being synonyms, homonyms [such as the permanently invalid primary homonym *Pheretima montana* 1999 (non Kinberg, 1867 – the type species of the genus)] or *species incertae sedis* and, as yet, no native *Pheretima* s. stricto are known from Japan.

About 30 species are known introductions with four “new records” by the current author, and another ten are possibly more widespread (e.g. in Korea/China), thus the probable number of wholly endemic Japanese earthworms is around 40 species (ca. 50% of the total valid species). A subsequent report of *Amyntas rodericensis* (Grube, 1879) from Japan by a non-specialist is dubious and unconfirmed. However, a definitive work on the systematics of all of Japan’s earthworms is pending, relying partly on review of all of Japan’s and Korea’s classical species, and partly on more systematic on the ground eco-taxonomic surveys.

While much of Easton’s synopsis is supported, *Pontodrilus* is now placed in Megascolecidae sensu Blakemore (2000) rather than Acanthodrilidae sensu Gates

(1959); *Amyntas carnosus* (Goto & Hatai, 1899) is removed from synonymy of *Amyntas gracilis*; and an informal *Amyntas corticis* species-complex is established to accommodate the various morphs of this widely distributed species group. *Pheretima* (*Parapheretima*) *koellikeri* Michaelsen, 1928 - previously considered synonymous with the prior *Metaphire vesiculata* (Goto & Hatai, 1899) - is provisionally restored (it may be an introduced taxon). *Polypheretima* is also removed from Japanese indigeneity as the original description of *Polypheretima iizukai* (Goto & Hatai, 1899) failed to report intestinal caeca and inspection of fresh material allows its placement in synonymy of *Amyntas fuscatus* (Goto & Hatai, 1898). Several new combinations by transfer to or from *Amyntas* and *Metaphire* were made. The *Metaphire hilgendorfi* / *Amyntas tokioensis* species-complex (*Amyntas hilgendorfi* species-complex sensu Easton, 1981) remains one of the most intractable and pressing problems for comprehension of the Japanese and Eastern Oriental fauna as it comprises a complex of parthenogenetically degraded morphs yet to be affiliated with their ancestral and biparental populations.

### Summary Checklist of Taxa

\* = exotic/introduced, - = native/endemic, # = uncertain origins/affinities; syn. = synonyms. For common exotics not all synonyms are given as these may be readily found elsewhere eg. Blakemore (2002 and in prep.).

### Family Moniligastridae

#1. *Drawida hattamimizu* Hatai, 1930.

\*2. *Drawida japonica* (Michaelsen, 1892) (syn. *grahami*).

#3. *Drawida keikiensis* Kobayashi, 1938.

#4. *Drawida koreana* Kobayashi, 1938.

-5. *Drawida moriokaensis* Ohfuchi, 1938.

#6. *Drawida nemora* Kobayashi, 1936.

-7. *Drawida ofunatoensis* Ohfuchi, 1938.

-8. *Drawida tairaensis* Ohfuchi, 1938.

Family Criodrilidae

-9. *Biwadrilus bathybates* (Stephenson, 1917) (syn. *miyashitai*).

Family Lumbricidae

*Aporrectodea caliginosa* species-group sensu Blakemore (2002). Included species reported from Japan (not all subsequently confirmed):

\*10. *Aporrectodea caliginosa* (Savigny, 1826).

\*11. *Aporrectodea trapezoides* (Dugès, 1828).

\*12. *Aporrectodea tuberculata* (Eisen, 1874).

\*13. *Aporrectodea rosea* (Savigny, 1826).

\*14. *Bimastos parvus* (Eisen, 1874).

#15. *Dendrobaena octaedra* (Savigny, 1826).

\*16. *Dendrobaena pygmaea* (Savigny, 1826). **New record for Japan/Asia.**

*Dendrodrilus rubidus* species-complex sensu Blakemore (2002). Included subspecies reported from Japan:

\*17. *Dendrodrilus rubidus rubidus* (Savigny, 1826).

\*18. *Dendrodrilus rubidus tenuis* (Eisen, 1874).

*Eisenia fetida* species-complex sensu Blakemore (2002). Included species reported

from Japan:

\*19. *Eisenia andrei* Bouché, 1972.

\*20. *Eisenia fetida* (Savigny, 1826).

#21. *Eisenia japonica* (Michaelsen, 1891) (syn. *japonica gigantea*; *japonica minuta*).

\*22. *Eiseniella tetraedra* (Savigny, 1826). **New record for Japan.**

Family Ocnerodrilidae

\*23. *Eukerria saltensis* (Beddard, 1895). **New record for Japan.**

\*24. *Ocnerodrilus occidentalis* Eisen, 1878.

Family Acanthodrilidae

\*25. *Microscolex phosphoreus* (Dugès, 1837).

Family Octochaetidae (Subfamily Benhamiinae)

\*26. *Dichogaster (Diplothecodrilus) bolau* (Michaelsen, 1891) (syn. *?hatomaana*).

\*27. *Dichogaster (Diplothecodrilus) saliens* (Beddard, 1893) (syn. *?hatomaana*).

Family Megascolecidae sensu Blakemore (2000)

#28. *Pontodrilus litoralis* (Grube, 1855) [syn. *marionis*; *bermudensis*, *matsushimensis*, *albanyensis*, *cygni*, *indica*, *gracilis*; full synonymy in Blakemore (2002)].

\*29. *Perionyx excavatus* Perrier, 1872 (syn. *gruenewaldi*; *fulvus*, *?koboensis*, *?turaensis*).

#30. *Amyntas carnosus* (Goto & Hatai, 1899) (syn. *?pingi* Stephenson, 1925; *kyamikia* Kobayashi, 1934; *?youngtai* Hong & James, 2001; *sangyeoli* Hong & James, 2001; *?A. nanshanensis* Shen *et al.*, 2003).

- 31. *Amyntas conformis* (Ishizuka, 2000) [syn. *monticola* Ishizuka, 2000 - a permanently invalid primary homonym, non Beddard, 1912 (= *Polypheretima monticola*); an invalid manuscript name "montivaga" was sometimes supplanted over this name].

*Amyntas corticis* species-complex. Included species from Japan:

- #32. *Amyntas corticis* (Kinberg, 1867) [syn. *diffringens*; *?sanctae-helenae*; *subquadrangula*; *indicus* Horst, 1883 [non *Perichaeta indica* : Horst, 1885 (= *Pheretima darnleiensis*)]; *peregrina*; *?mirabilis*; *heterochaeta*; *?ijimae*; *divergens*; *nipponica*; *?molukaiensis*; *heteropoda*; *?marenzelleri*; *divergens yunnanensis*; *?sheni*; *oyamai*; *tajiroensis*; *?homosetus*; *?mori*; *toriii*; *clerica*; *?hatomajimensis*; *medicampestris* Nakamura, 1999 [nom. nov. pro *campestris* Lee, 1952 non Goto & Hatai, 1898 (= *A. robustus*)]; *imajimai*; *confusa*; *nipparensis*; *subrotunda*; *rufidula*; *silvestris* Ishizuka, 1999 [a permanently invalid primary homonym, non Michaelsen, 1923]; *semilunaris*; *fulva*; *subterranea*; *subalpina*; *mutabilis*; *nubicola*; *umbrosa*; *invisa* Ishizuka, 2000 [a permanently invalid primary homonym, non Cognetti, 1913]; *nigella*; *?setosa* Ishizuka *et al.*, 2000 (a permanently invalid primary homonym, non Cognetti, 1908)].
- 33. *Amyntas distichus* (Ishizuka, 2000).
- 34. *Amyntas ellipticus* (Ishizuka, 1999).
- 35. *Amyntas flavescens* (Goto & Hatai, 1898) (syn. *producta*; *houletti* *bidenryoana*; *leucocirca* : Ohfuchi, 1956 [non Chen, 1933]; *noharuzakiensis* ).
- 36. *Amyntas fuscatus* (Goto & Hatai, 1898) (syn. *grossa*; *iizukai*; *??shimaensis* **Comb. nov.**; *montana* Ishizuka, 1999 [a permanently invalid primary homonym, non

Kinberg, 1867]; *atrорubens*; *alpestris*; *dura*; *turgida*;  
*argentea*; ?*flavida*; ?*lactea*; ?*mitakensis*).

#37. *Amyntas glabrus* (Gates, 1932) (syn. *tenellula*; *vieta*; *papilio* : Ohfuchi, 1956  
[?misidentification, non Gates, 1930]).

\*38. *Amyntas gracilis* (Kinberg, 1867) [syn. *hawayana*; *bermudensis*;  
*mandhorensis*; ?*mauritiana*; ?*kamakurensis*; ?*parvula* Goto & Hatai, 1898 non  
Ohfuchi, 1956 (= *Metaphire parvula*) nec Ishizuka *et al.*, 2000 (= '*P.*' *pararva*  
Blakemore, 2003); ?*decimpapillata*; ?*kagoshimensis*; *autumnalis*].

-39. *Amyntas habereri* (Cognetti, 1906).

\*40. *Amyntas hupeiensis* (Michaelson, 1895).

-41. *Amyntas? japonicus* (Horst, 1883).

-42. *Amyntas kunigamiensis* (Ishizuka & Azama in Ishizuka, Azama & Sasaki, 2000).

-43. *Amyntas micronarius* (Goto & Hatai, 1898) (syn. ?*yamizoyamensis* ; *obtusa* ;  
*hinoharensis*; ?*hypogaea* **syn. nov.**; ?*edoensis* **syn. nov.**).

\*44. *Amyntas minimus* (Horst, 1893) (syn. *pusilla* Ude, 1893 [non Ohfuchi, 1956];  
*enchytraeoides* ; *zoysiae* ; ?*fungina*; ?*muta*; *ishikawai*; *humilis*).

\*45. *Amyntas morrissi* (Beddard, 1892) (syn. *barbadensis*; ?*pallida*; *hawayana lineata* ;  
*exiloides* : Ohfuchi, 1956 [non Chen, 1936] ; *elongata* : Ohfuchi, 1956 [non  
Perrier, 1872]).

-46. *Amyntas obscurus* (Goto & Hatai, 1898) [non Spencer, 1893 (= *Diporochoaeta*  
*obscura*)].

\*47. *Amyntas papulosus* (Rosa, 1896) (syn. *papulosa sauteri*; *composita*; *rockefelleri*;  
*hsinpuensis* Kuo, 1985).

-48. *Amyntas parvicystis* (Goto & Hatai, 1899) [syn. ?*verticosa*; cf. *tokioensis*].

#49. *Amyntas phaselus* (Hatai, 1930) [syn. ?*maculosus* Hatai, 1930 [non Gates, 1933 (= *malaca* Gates, 1936) nec *medimaculosa* Nakamura, 1999]; ?*kamitai* (syn. *serrata*), ?*phaselus tamurai*.

-50. *Amyntas quintanus* (Ishizuka, 1999).

\*51. *Amyntas robustus* (Perrier, 1872) [syn. *masatacae*; *campestris* Goto & Hatai, 1898 (non Lee, 1952); ?*zavattarii*; *ornata*; ?*sheni*; ?*lauta* (*siemsseni*, *fokiensis*); *corrugata*].

-52. *Amyntas scholasticus* (Goto & Hatai, 1898).

-53. *Amyntas yambaruensis* (Ishizuka & Azama in Ishizuka, Azama & Sasaki, 2000).

\*54a. *Duplodico-drilus schmardae schmardae* (Horst, 1883) [non *Megascolex schmardae* Michaelsen, 1897], (syn. *triphyla*; *kikuchii*).

\*54b. *Duplodico-drilus schmardae macrochaeta* (Michaelsen, 1899).

-55. *Metaphire acincta* (Goto & Hatai, 1899) (syn. *yezoensis*).

\*56. *Metaphire californica* (Kinberg, 1867) (syn. *modesta*; *molesta*; *sakaguchii*; *sonaiensis*).

*Metaphire hilgendorfi* / *Amyntas tokioensis* species-complex [*Amyntas hilgendorfi* species-complex sensu Easton (1981)]. Included species recorded from Japan:

-57. *Amyntas agrestis* (Goto & Hatai, 1899) (syn. *striata*).

-58. *Amyntas ambiguus* (Cognetti, 1906) [Non *Pheretima barbara ambigua* Cognetti, 1913: 302 from New Guinea (= *Pheretima barbigua* Blakemore, 2004 nom. nov)].

-59. *Amyntas gomejimensis* (Ohfuchi, 1937).

#60. *Amyntas koreanus* (Kobayashi, 1934) (syn. *Pheretima conjugata* Ishizuka, 1999 - synonym as per Blakemore, 2003: 43, addenda).

- 61. *Amyntas purpuratus* (Ishizuka, 1999b).
- #62. *Amyntas tappensis* (Ohfuchi, 1935) (syn. *bimaculata*, *silvatica*, *?surcata*, *odaesanensis* Hong & James, 2001, *rightii* Hong & James, 2001, *fasciiformis* Hong & James, 2001 - synonym as per Blakemore, 2003: 43, addenda; *sanchongensis* Hong & James, 2001 **Syn. nov.**).
- #63. *Amyntas tokioensis* (Beddard, 1892) (syns. *?Perichaeta schizopora* Goto & Hatai, 1898: 76, *?Perichaeta irregularis* Goto & Hatai, 1899: 13, *Perichaeta levis* Goto & Hatai, 1899: 20, (*?parvicystis*; *?verticosa*; *?Amyntas yongshilensis* Hong & James, 2001: 80), *A. eastoni* Hong & James, 2001: 83; *A. boletiformis* Hong & James, 2001: 84 (these synonyms as per Blakemore, 2003: 43, addenda; 2005); *?Amyntas paiki* Hong in Hong, Lee & Kim, 2001: 266 **Syn. nov.** from Korea - <http://zoolstud.sinica.edu.tw/Journals/40.4/263.pdf>).
- 64. *Amyntas vittatus* (Goto & Hatai, 1898).
- 65. *Amyntas? yunoshimensis* (Hatai, 1930).
- 66. *Metaphire communissima* (Goto & Hatai, 1899) (syn. *Perichaeta sieboldi* : Goto & Hatai, 1898: 65 [non *Megascolex sieboldi* Horst, 1883 (= *Metaphire sieboldi*)]; *sieboldi lenzi* ; *florea*).
- 67. *Metaphire hataii* (Ohfuchi, 1937: 13). [Provisionally restored from *Metaphire agrestis* (= *Amyntas agrestis*) synonymy].
- #68. *Metaphire hilgendorfi* (Michaelsen, 1892) [syn. *rokugo*; *?irregularis* Goto & Hatai, 1899 (non Spencer, 1895 = *Perionychella irregularis*); *?yunoshimensis*, *glandularis*].

-69. *Metaphire servina* (Hatai & Ohfuchi, 1937).

#70. *Metaphire vesiculata* (Goto & Hatai, 1899)  
(syn. ?*koellikeri*; ?*okutamaensis*; ?*biggiberosa*).

\*71. *Metaphire yamadai* (Hatai, 1930) (syn. ?*pectinifera* Michaelsen, 1931 -  
synonym as per Blakemore, 2003: 43, addenda).

[End of *M. hilgendorfi* / *A. tokioensis* species-complex].

#72. *Metaphire megascolidioides* (Goto & Hatai, 1899).

-73. *Metaphire parvula* (Ohfuchi, 1956) [non Goto & Hatai, 1898; nec Ishizuka *et al.*,  
2000 (= '*P. parlarva* nom. nov. Blakemore, 2003)].

\*74. *Metaphire peguana* (Rosa, 1890) (syn. *saigonensis*).

-75. *Metaphire riukuensis* (Ohfuchi, 1957).

-76. *Metaphire sieboldi* (Horst, 1883) [non *Perichaeta sieboldi* : Beddard, 1892b: 759; nec  
Goto & Hatai, 1898: 65 (= *Metaphire communissima*)], (syn. *setosa* Cognetti,  
1908 [non Ishizuka *et al.*, 2000]).

#77. *Metaphire soulensis* (Kobayashi, 1938) (syn. *Pheretima shinkeiensis* Kobayashi,  
1938, *Pheretima aokii* Ishizuka, 1999 - synonymy as per Blakemore, 2003: 43,  
addenda).

-78. *Metaphire tosaensis* (Ohfuchi, 1938).

#79. ?*Pheretima (Parapheretima) koellikeri* (Michaelsen, 1928) (?introduction).

\*80. *Pithemera bicincta* (Perrier, 1875) (syn. ?*violacea*, ?*aimerikiensis*- synonym as  
per Blakemore, 2003: 43, addenda).

*Polypheretima elongata* species-complex [*Metaphretima elongata* species-complex  
sensu Sims & Easton (1972); Easton (1976)]. Included species from Ryuku Islands:

\*81. *Polypheretima elongata* (Perrier, 1872) [non *Pheretima elongata* :

Ohfuchi, 1956 (= *Amyntas morrisi*), (syn. *biserialis*, *acystis*, *monocystis*, *aelongata*).

Family Glossoscolecidae

\*82. *Pontoscolex corethrurus* (Müller, 1857) (syns. - see Blakemore (2002). **New record for Okinawa, Japan** [although Nakamura (1994) reports it from Ogasawara (=Bonin) Isls.].

# *Species incertae sedis* [i.e., “of uncertain taxonomic position” ICZN (1999: Glossary)].

*Amyntas hibernus* (Ishizuka, 1999).

*Amyntas illotus* (Gates, 1932) species-group sensu Sims & Easton (1972). Included names recorded from Japan:

*Amyntas assacceus* (Chen, 1938) [syn. *medipusillus* Nakamura, 1999 nom. nov. pro *Pheretima pusilla* Ohfuchi, 1956 (non Ude, 1893); ?*Amyntas proasacceus* (sic) Tsai *et al.*, 2001].

*Amyntas illotus* : Ohfuchi, 1956: 136 [non Gates, 1932: 397].

*Amyntas imperfectus* (Ishizuka, 1999).

‘*Pheretima*’ *oyuensis* Ohfuchi, 1937.

[End of *A. illotus* species-group].

*Amyntas octo* (Ishizuka, 2000).

*Amyntas stipatus* (Ishizuka, 1999).

*Amyntas tamaensis* (Ishizuka, 1999).

‘*Pheretima*’ *pararva* Blakemore, 2003 nom. nov. pro *P. parvula* Ishizuka *et al.*, 2000 non *Perichaeta parvula* Goto & Hatai, 1889 (?= *A. gracilis*), nec *Pheretima parvula* Ohfuchi, 1956 (= *Metaphire parvula*).

(\* = exotic/introduced, - = native/endemic, # = uncertain affinities, syn. = synonyms).

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[End of Japanese species checklist].